



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/828,939	04/21/2004	William R. Siskos	1930A1	7209

7590 09/06/2006

PPG Industries, Inc.  
Intellectual Property Dept.  
One PPG Place  
Pittsburgh, PA 15272

EXAMINER

LAZORCIK, JASON L

ART UNIT PAPER NUMBER

1731

DATE MAILED: 09/06/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/828,939

Applicant(s)

SISKOS, WILLIAM R.

Examiner

Jason L. Lazorcik

Art Unit

1731

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 21 April 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 37 is/are pending in the application.
- 4a) Of the above claim(s) 30-37 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-29 is/are rejected.
- 7) ☐ Claim(s) 11,12 and 24-28 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 21 April 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 07/23/2004.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☒ Other: IDS Filed 11/17/2005.

## **DETAILED ACTION**

### ***Election/Restrictions***

Restriction to one of the following inventions is required under 35 U.S.C. 121:

- I. Claims 1 through 29, drawn to “a sheet bending apparatus”, classified in class 65, subclass 287.
- II. Claim 30, drawn to “a shaping mold”, classified in class 425, subclass 437.
- III. Claims 31 through 37, drawn to “a method of bending a sheet”, classified in class 65, subclass 106.

The inventions are distinct, each from the other because of the following reasons:

Inventions (I) and (II) are related as combination and subcombination. Inventions in this relationship are distinct if it can be shown that (1) the combination as claimed does not require the particulars of the subcombination as claimed for patentability, and (2) that the subcombination has utility by itself or in other combinations (MPEP § 806.05(c)). In the instant case, the combination would be utilized in a similar press molding operation without the use of a cloth covering over the pressing face of the first mold. The subcombination has separate utility such as use in a plastic molding apparatus.

Inventions (III) and (I) are related as process and apparatus for its practice. The inventions are distinct if it can be shown that either: (1) the process as claimed can be practiced by another and materially different apparatus or by hand, or (2) the apparatus as claimed can be used to practice another and materially different process. (MPEP §

806.05(e)). In the instant case, the apparatus (I) can be utilized in a materially different process such as the press bending of a plastic sheet.

Inventions (II) and (III) are unrelated. Inventions are unrelated if it can be shown that they are not disclosed as capable of use together and they have different designs, modes of operation, and effects (MPEP § 802.01 and § 806.06). In the instant case, the different inventions are identified as method and subcombination of an apparatus for its practice. As such, said inventions (II) and (III) are deemed unrelated.

Because these inventions are independent or distinct for the reasons given above and the inventions require a different field of search (see MPEP § 808.02), restriction for examination purposes as indicated is proper.

During a telephone conversation with Andrew Siminerio on August 17, 2006 a provisional election was made with traverse to prosecute the invention of a sheet bending apparatus, claims 1 through 29. Affirmation of this election must be made by applicant in replying to this Office action. Claims 30 through 37 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

### ***Claim Objections***

Claims 11, 12 are objected to because of the following informalities: Claim 11 line 3 recites the limitation that "the outer wall is portion" which appears to be a grammatical error. Claim 12 line 4 recites the limitation that "the outer wall has one end mounted to outer vertical surface..." which appears to be a grammatical error. Appropriate correction is required.

Claims 24 through 28 are objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. In the instant case, it is unclear how the intended use of the bending apparatus within a pressing station further limits the structure of said bending apparatus.

***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1 through 28 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 recites the limitation "the second opposite end" in line 25. There is insufficient antecedent basis for this limitation in the claim.

Claim 4 recites the limitation "the second major surface of the first mold" in line 2. There is insufficient antecedent basis for this limitation in the claim.

Claim 8 recites the limitation "The horizontal member of the "T" rail" in line 3. There is insufficient antecedent basis for this limitation in the claim.

Claim 9 recites the limitation "the outer surface of the horizontal member of the "T" rail" in Line 2. There is insufficient antecedent basis for this limitation in the claim.

Claim 10 recites the limitation "the horizontal member of the "T" rail" in line 2. There is insufficient antecedent basis for this limitation in the claim.

Claim 11 recites the limitation "the horizontal member of the "T" rail" and "the horizontal member of the "T" in lines 2 and 3, respectively. There is insufficient antecedent basis for this limitation in the claim.

Claim 12 recites the limitation "the upper end of the "I" rail " in line 3. There is insufficient antecedent basis for this limitation in the claim.

Claim 15 recites the limitation "the outer surface of the outer wall" in line 7. There is insufficient antecedent basis for this limitation in the claim.

Claim 20 recites the limitation "wherein the opening of the first end of the second plurality of passageways is equal to or less than the spacing of the weave". However applicant has failed to set forth a specific metric (eg. depth, diameter, etc.) for said opening by which to effect the aforementioned limitation.

Claim 20 recites the limitation "the spacing of the weave" in line 5. There is insufficient antecedent basis for this limitation in the claim.

Claim 20 recites the limitation "the second end of the second plurality of passageways" in line 6. There is insufficient antecedent basis for this limitation in the claim.

Claim 21 sets forth the limitation wherein the first end opening is greater than the second end opening at the press face in line 4, however in claim 17 lines 4-5 indicate that the first end of the second plurality of passageways is located upon the press face of the shaping member. Due to the above contradictory and conflicting description, the

Art Unit: 1731

particular metes and bounds of the current limitation are rendered unclear and indefinite. Further, applicant has failed to set forth a specific metric (eg. depth, diameter, etc.) upon each opening by which to assess compliance with the limitation wherein "at least one of the passageways of the second plurality of passageways has a first end opening greater than the second end opening" in lines 3-4.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

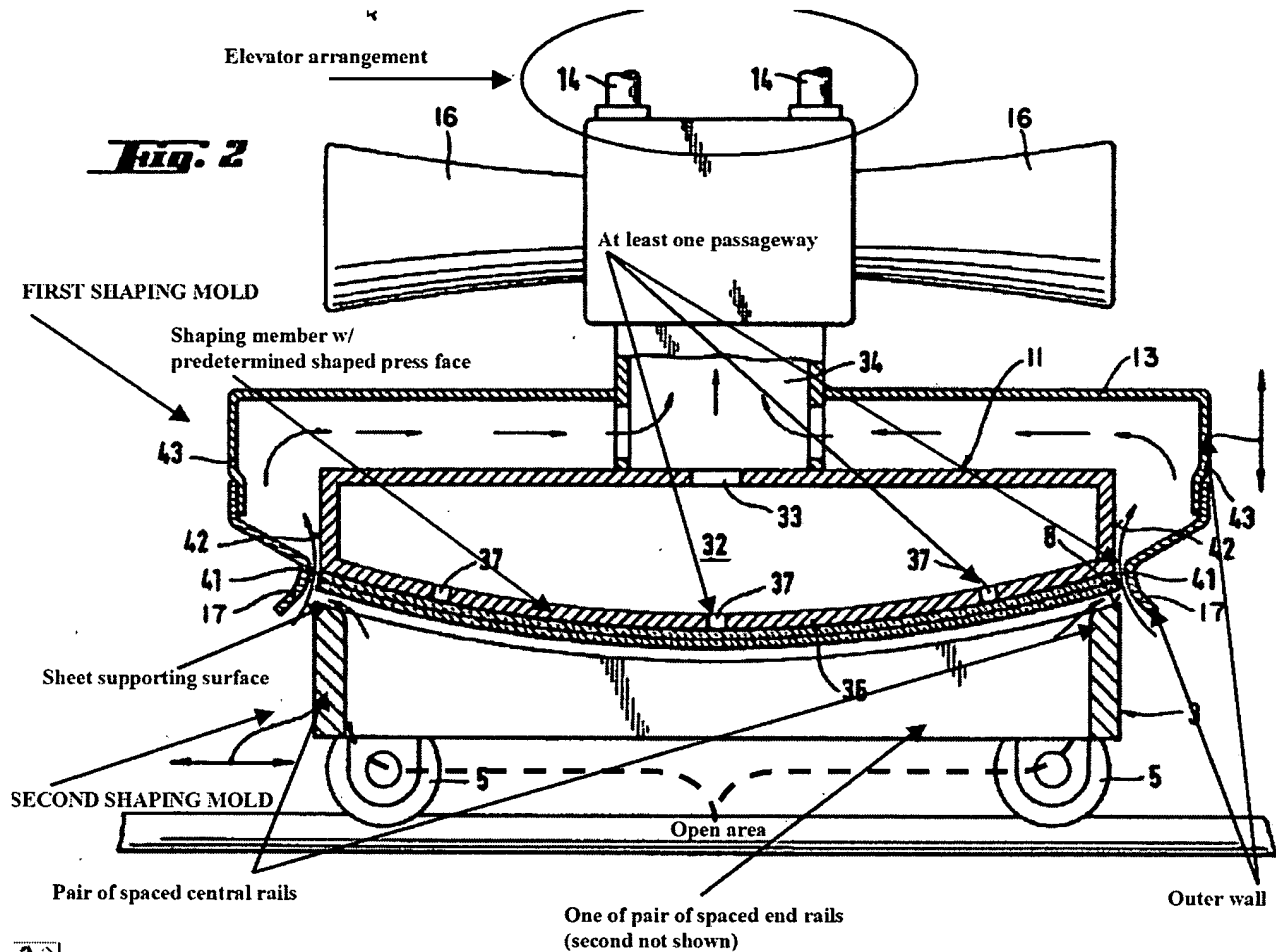
A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 2, 4-7, 12-18, and 24-29 are rejected under 35 U.S.C. 102(b) as being anticipated by Kuster (US 5,713,976). Briefly, Kuster teaches a sheet bending apparatus comprising a concave annular bending block serving as both a bending ring and means for conveyance and a convex bending block acting from above on the surface of the glass sheet. An excerpt of figure 2 from the immediate reference is presented below with Examiners' annotations to reflect the applicants' chosen lexicography in order to best illustrate the specific elements from the claims under

Art Unit: 1731

consideration.



With respect to Claims 1, 2, 4, 5, and 7 and with particular reference to the annotated excerpt figure 2 above, Kuster sets forth a first mold with shaping member having a press face and second shaping mold defining a **continuous, annular sheet supporting surface** [Claim 2] and open area.

The apparatus further including an outer wall **mounted to the second major surface of the first mold** [Claim 4], which in cooperation with the first and second molds defines an enclosure during a pressing operation (Column 4, lines 36-38). This outer wall surrounds and is **spaced from the shaping member** [Claim 5] of the first



Art Unit: 1731

mold and has one part of ***an aligning arrangement (17)*** [Claim 7] which cooperates with an aligning arrangement of the second mold (eg. the rails) as claimed.

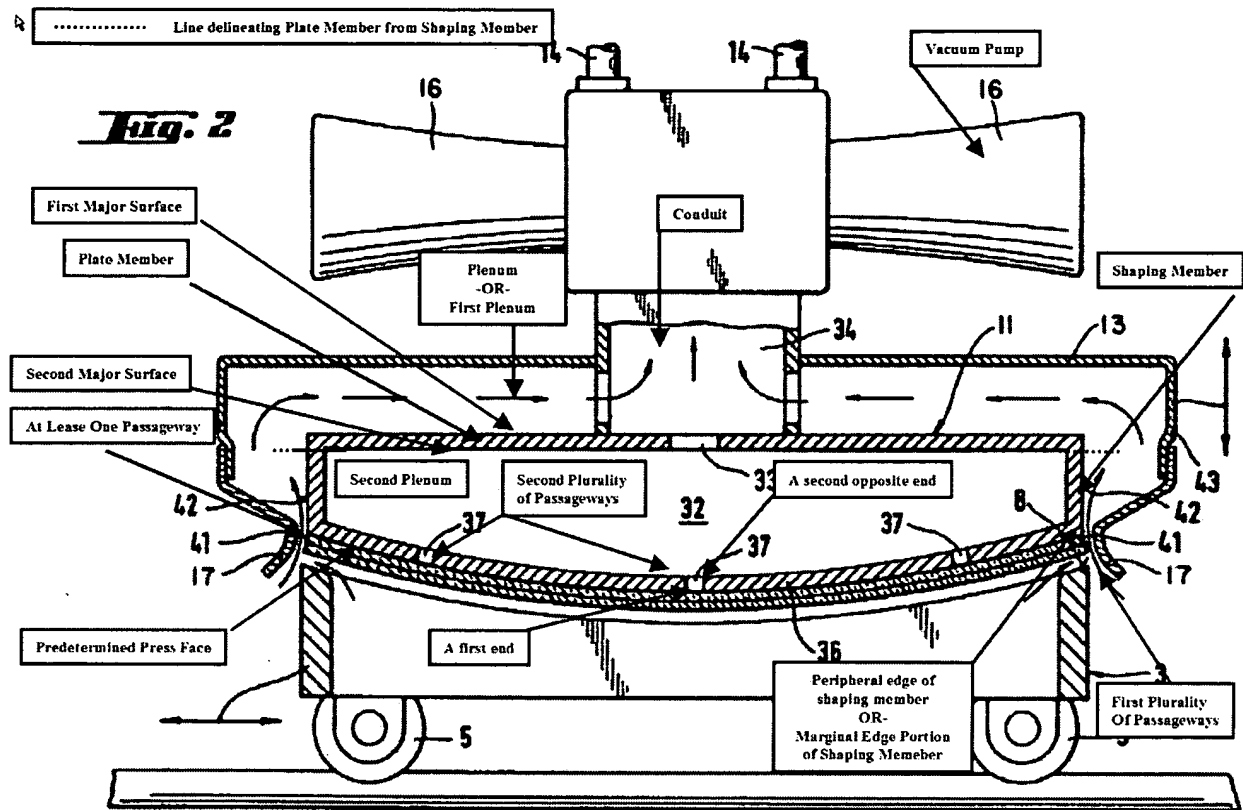
The apparatus further comprises an elevator arrangement operating on at least one of the first and second molds. Said apparatus additionally including "at least one passageway other than the open area with first end in fluid contact with the enclosure and the second opposite end outside the enclosure.

With respect to Claim 6, Kuster teaches (column 4, Lines 23-38) that the "surrounding flange (17) which reduces the gap between the casing (13) and the monolithic convex bending block (11)" can be made to "eliminate the gap completely and by appropriate means to close the space between the annular bending ring (3) and the casing (13)". Where the stated process of "eliminating the gap completely" is understood as functionally equivalent to the claimed process of mounting the outer wall to the rails, the previous statement is read in the immediate claim as mounting the outer wall to the central rails and the end rails.

Regarding Claim 12 and in light of the rejection of Claim 6 above, the rails in figure 2 above are understood to have an "I" shaped cross section with the upper end providing the sheet supporting surface. Further as outlined in the rejection of Claim 6, the outer wall has one end "mounted" to the outer vertical surface of the "I" rail and

Art Unit: 1731

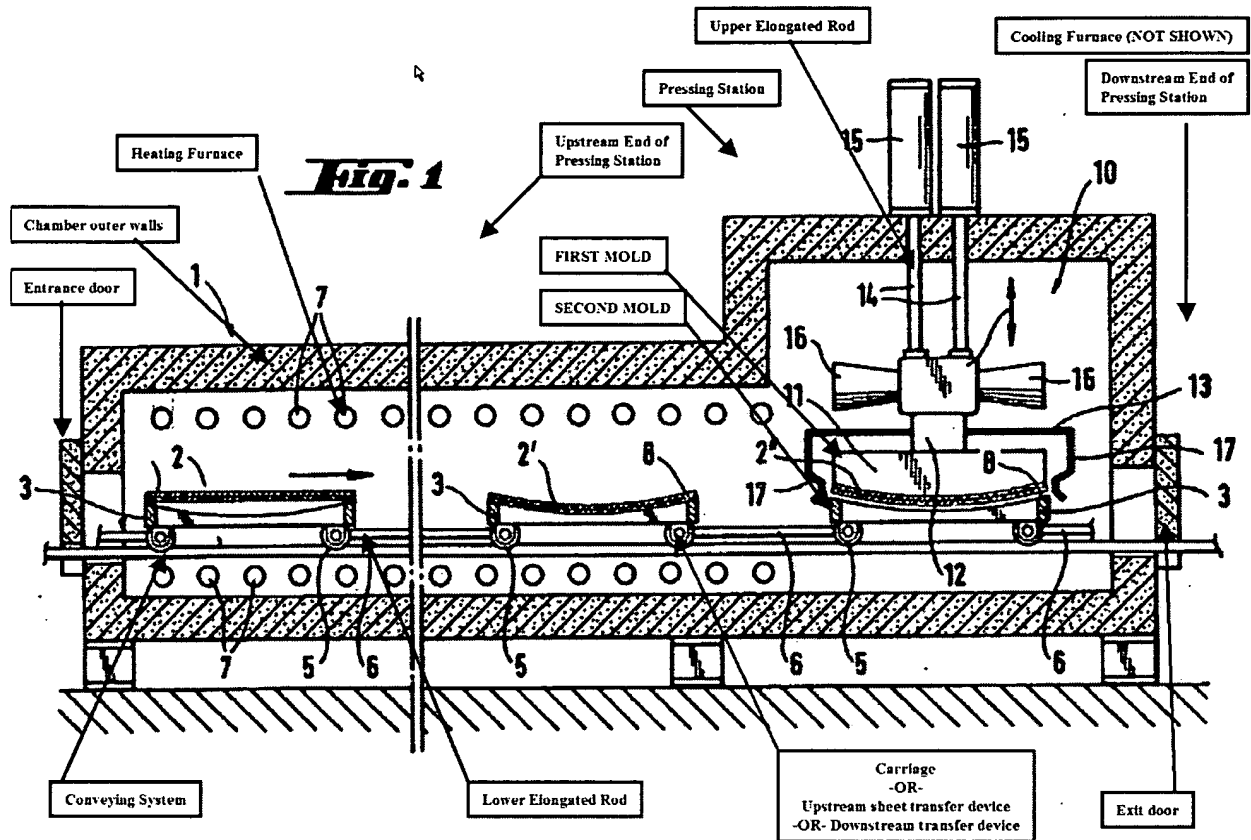
extends away from the "I" rail and the open area during a press operation.



Claims 13, 14, 15, 16, 17, and 18 are anticipated in light of the second annotation of Figure 2 from the Kuster reference presented immediately above. Individual elements indicated on the first annotated version of Figure 2 have been re-annotated where appropriate to reflect applicant's chosen lexicon in the identified claims.

Claims 24, 25, 26, 27, and 28 are anticipated in light of the annotated excerpt figure 1 presented below. Said figure has been edited with examiners annotations in order to assist correlation of prior art teachings with applicants claimed elements in applicants chosen lexicon. Details of the operation are also set forth in the immediate reference Column 3, line 56 through Column 4, line 49.

Art Unit: 1731



Claim 29 is anticipated in light of the combination of the annotated Figure 1 and the Figure 2 second annotation as presented above.

### **Claim Rejections - 35 USC § 103**

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

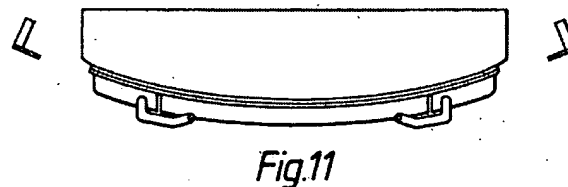
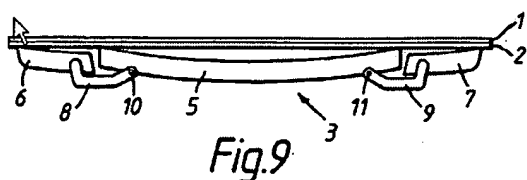
(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Art Unit: 1731

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

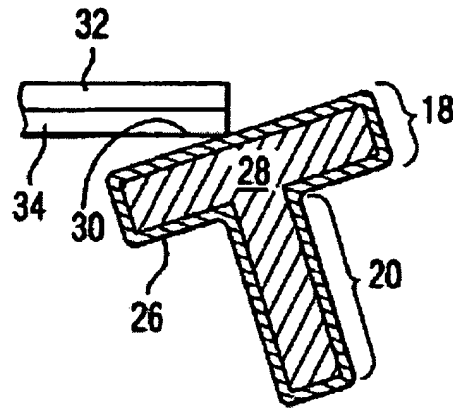
Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kuster (5,713,976) as applied to claim 1 above, and further in view of Jacques (5,437,703). Kuster fails to explicitly set forth a case wherein the central rails are secured in position and the end rails are pivotally mounted to pivot from a first position providing a generally horizontal support for a sheet to a second position where portions of the ends of the end rails are raised above the central rails. Jacques presents a ring mold having movable ends providing said first generally horizontal support (Fig 9) and said second raised configuration (Fig 11) to achieve deep and/or complex bent shapes (Abstract).



It would therefore have been obvious to one of ordinary skill in the art at the time of the invention seeking to achieve a deep bend in a glass sheet to utilize the reconfigurable ring mold as taught by Jacques in the sheet molding system taught by Kuster.

Claims 8 through 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kuster (5,713,976) as applied in the rejections of Claims 1, 6, 7 and 12 above and in further view of Skeen (US 6,629,436 B1).

With respect to Claim 8, Kuster teaches that the central and end rails have a "I" shaped cross section (as evidenced in the Fig 2 excerpt above) while failing explicitly set forth that they may be constructed with a "T" shaped cross section as claimed. Skeen teaches (Column 2, Lines 3-6) that glass bending ring mold "rails themselves are usually pre-shaped to have a shape to support the unbent sheet while also supplying the mold for the curved or bent sheets" and that (see Fig 5 excerpt and Column 2, Lines 36-39) "the rail member itself may be a bar member that supports the glass sheets slightly inboard of the glass sheets periphery or it may be an "L" or "T" shaped member." It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the central and end rails of the Kuster process to utilize a "T" shaped member as taught by Skeen. This would have been an obvious modification to one seeking to provide adequate support to both an unbent and bent glass sheet.



**FIG. 5**

Regarding Claim 9 and in light of the rejections of Claims 6 and 12 under 35 U.S.C. 102(b), Kuster teaches that the surrounding flange (17) portion of the outer wall can “eliminate the gap completely” by closing “the space between the annular bending ring (3) and the casing (13)” and as such is “connected” to the outer surface of the rail and extends away from said rail. In accord with the obviousness type modification set forth in the rejection of Claim 8 above and the premise set forth in Claims 6 and 12, it would be obvious to “connect” the surrounding flange (17) portion of the outer wall to the outer surface of the horizontal member of the “T” rail in order to “eliminate the gap completely” between the ring and the casing as taught by Kuster.

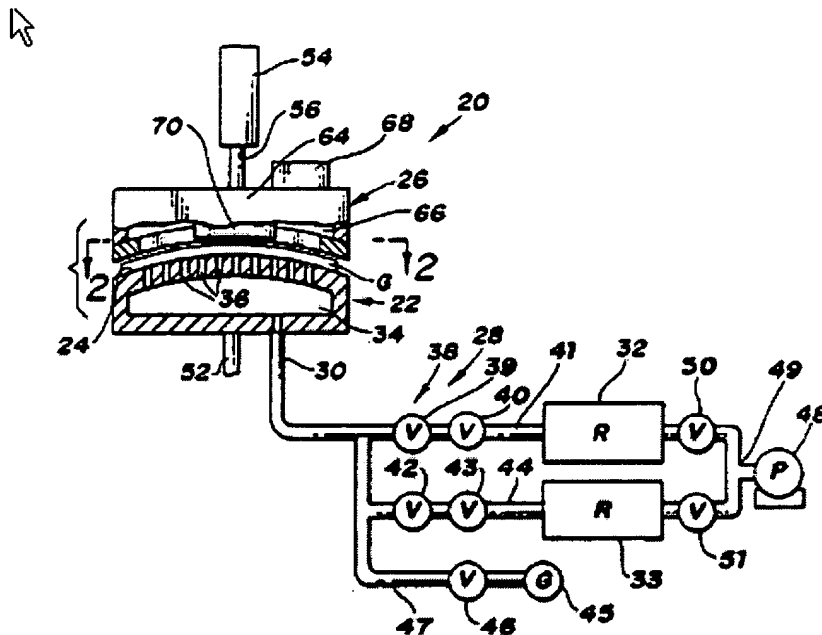
Claim 10 is obvious in light of the combined rejections of Claim 8 and 9 above.

With respect to Claim 11, it is understood that the process of *connecting* the surrounding flange (17) portion of the outer wall to the outer surface of the horizontal

Art Unit: 1731

member of the "T" rail, as set forth in the rejection of Claim 9, results in a functionally equivalent structure to the one claimed wherein "the outer wall is portion of the horizontal member of the "T" farthest from the open area".

Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kuster (5,713,976) as applied to claim 1, 17, and 18 above, and further in view of Shetterly (5,376,158). Kuster teaches (See Fig 2 – Second Annotation above) a second plenum inside the first plenum and the first plenum connected by a conduit to a vacuum pump. Kuster further indicates (Column 4, Lines 60-64) the "an excess pressure is briefly created in the hollow space (32) or "the second plenum" when the pair of glass sheets has to be replaced on the annular bending ring". Kuster fails to explicitly indicate that the second planum should be connected via a valve having a first open position and a second open position. Shetterly, teaches a vacuum press mold utilizing a valve system (indicated as V in excerpt image below) to control application of vacuum or pressurized gas to the perforated pressing mold.



Further, Two-way valves of the type described by the applicant are old and well known tools in the art for switching a system between vacuum and pressure. It would have been obvious to one of ordinary skill in the art at the time of the invention to utilize a two-way valve or valve system as taught by Shetterly to control the application of "an excess pressure" in the second plenum as taught by Kuster. The use of a valve would have been obvious for one seeking selective application of either elevated pressure or vacuum to a system.

Claims 20 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over (5,713,976) as applied to claims 1 and 17 above above, and further in view of Vanhuysee (US 6,276,173 B1). Kuster teaches that the forming plate (36) or the shaping member "may be covered by a refractory air-permeable fabric or membrane" (Column 4, Lines 55-57). Kuster fails to explicitly limit the weave density with respect to the size of the openings of the first or second passageways or that the sheet supporting



Art Unit: 1731

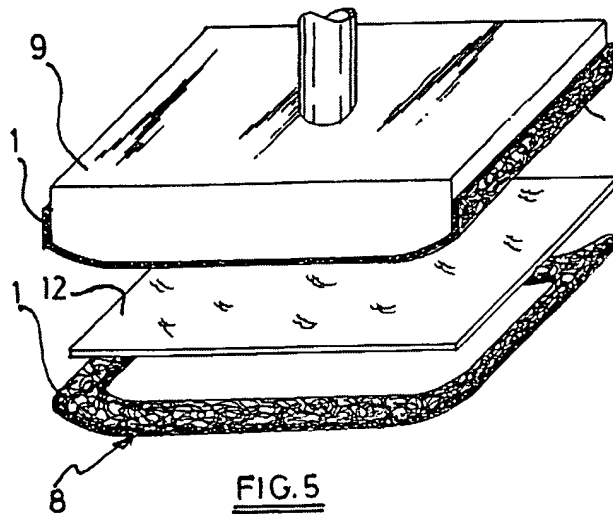
surface of the second mold should be provided with a mesh cloth covering in addition to the one provided upon the press face of the shaping member.

With respect to Claim 20, Vanhuyse teaches that “the metallic covering—and the mesh when present—cover the perforations (of the mold surface), so that they partially lose their function...which is to promote the flow of air” and “The use of a coarser mesh has a positive effect on the air permeability, but in turn results in an even more frequent contact between the mesh and glass”. While Vanhuyse sets forth the relationship between covering weave density for a ring mold in a glass pressing operation, the tradeoff between adequate air flow and mold face contact with the glass sheet would reasonably be expected to apply for a covering on a press member of the type set forth in the present invention. Specifically, since the role of the passageways in the first mold, as indicated by Kuster, is to provide air flow at the molding surface and a fabric covering is provided on said surface, it would be obvious to one of ordinary skill in the art at the time of the invention to optimize the weave density of said covering as taught by Vanhuysee. It would be obvious to perform such an optimization in order to provide a covering weave density between a too tight weave which would restrict air flow through the passageways and a too loose weave potentially marring the glass surface by allowing mold face contact on the glass sheet.

Regarding Claim 23, Vanhuyse teaches (Column1, Lines 14-25) “the contact member or covering can for example be used to cover the support rings (pressure and tempering rings)” and “the actual moulding means, such as for example the pressure moulds, can also be covered with the covering.” It would have been obvious to one of

Art Unit: 1731

ordinary skill in the art at the time of the invention to utilize an appropriate fabric covering on both the first and second molds as taught by Vanhuysse in order to minimize direct contact of either of said mold faces with the glass surface in order to minimize undue marring of the glass surface.



### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jason L. Lazorcik whose telephone number is (571) 272-2217. The examiner can normally be reached on Monday through Friday 8:30 am to 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven Griffin can be reached on (571) 272-1189. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 1731

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JLL

  
STEVEN P. GRIFFIN  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 1700